REMARKS

In a final Office Action dated February 22, 2006, the Examiner rejected claims 1-3, 5, 6, 11-13, 15, and 16 under 35 U.S.C. §103(a) as being unpatentable over Gross et al. (U.S. patent no. 6,556,809, hereinafter referred to as "Gross") in view of Lopes et al. (U.S. patent no. 6,453,176, hereinafter referred to as "Lopes"). The Examiner rejected claims 7 and 17 under 35 U.S.C. §103(a) as being unpatentable over Gross in view of Lopes and further in view of Rashid-Farrokhi et al. (U.S. patent no. 6,304,750). The Examiner rejected claims 9 and 22 under 35 U.S.C. §103(a) as being unpatentable over Gross in view of Lopes and further in view of Visotsky et al. (U.S. patent no. 6,175,588, hereinafter referred to as "Visotsky"). The Examiner objected to claims 4, 8, 10, 14, 18-21, and 23 as being dependent upon a rejected base claim but as being allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. The rejections are traversed and reconsideration is hereby respectfully requested.

The Examiner rejected claims 1-3, 5, 6, 11-13, 15, and 16 under 35 U.S.C. §103(a) as being unpatentable over Gross in view of Lopes. Specifically, with respect to claim 1, the Examiner contended that Gross teaches a transmitting communication device (FIG. 1 (110)) having an antenna array (FIG. 2 (204)) comprising multiple array elements (col. 4, lines 10-17), the method comprising jointly optimizing multiple weighting coefficients to produce multiple optimized weighting coefficients for use by the transmitting communication device in transmitting to multiple subscriber units (FIG. 1 (130)), wherein each optimized weighting coefficient is associated with an element of the multiple array elements and is further associated with a subscriber unit of the multiple subscriber units (Abstract, col. 1, lines 8-14, col. 2, lines 33-40, col. 3, lines 6-12, col. 4, lines 10-37, col. 5, lines 1-13, col. 7, lines 1-23 and 42-45, col. 9, lines 44-45 and 51-53, col. 10, lines 38-45, and col. 12, lines 9-16). The Examiner acknowledged that Gross does not disclose that each subscriber unit of the multiple subscribed units is associated with a different beam of multiple beams. However, the Examiner contended that Lopes discloses multiple subscriber units that are each associated with a different beam of multiple beams (col. 1, lines 22-25; col. 5, lines 8-14; col. 7, lines 35-47).

The applicants respectfully disagree with the Examiner's application of Gross and Lopes to the pending claims. The only reference in Gross to a joint optimization is in column 10, line 44, where Gross mentions to "jointly maximize SINR for multiple simultaneous users within the beam." Nowhere does Gross teach how to perform such an optimization. Nowhere does Gross define what is meant here, provide any expression for how to jointly maximize the SINR, or provide any algorithm for jointly maximizing the SINR. The unsupported mention of a joint maximization cannot be construed to teach a joint maximization. To the contrary, the only maximization taught by Gross is an iterative, sequential maximization (see col. 8, lines 8-17). Furthermore, as acknowledged by the Examiner, the optimization mentioned by Gross is of a single beam that is used by multiple users that have been assigned that beam. By contrast, claim 1 teaches a joint optimization of weighting coefficients associated with multiple beams, that is, a joint optimization of weighting coefficients associated with multiple users each user of multiple users is associated with a different beam of the multiple beams. In other words, Gross merely teaches a forming of a single beam. Claim 1 teaches how to jointly optimize multiple beams. Such features are nowhere taught by Gross.

Lopes concerns an assignment of multiple fixed beams to multiple subscriber units and with association of different receivers to the beams. Lopes does not teach any optimization scheme, let alone a joint optimization of the weighting coefficients for the multiple beams. Therefore, nothing in Lopes teaches any more than the teaching in Gross of a method for iteratively maximizing a single beam.

As a result, neither Gross nor Lopes, individually or in combination, teaches the features of claim 1 of jointly optimizing a plurality of weighting coefficients to produce a plurality of optimized weighting coefficients for use by the transmitting communication device in transmissions to the plurality of subscriber units, wherein each subscriber unit of the plurality of subscriber units is associated with a different beam of a plurality of beams and wherein each optimized weighting coefficient of the plurality of optimized weighting coefficients is associated with an element of the plurality of elements and is further associated with a subscriber unit of the plurality of subscriber units. Accordingly, the applicant respectfully requests that claim 1 may now be passed to allowance.

Since claims 2-4 depend upon allowable claim 1, the applicant respectfully requests that claims 2-4 may now be passed to allowance.

Claim 11 includes features of jointly optimizing multiple weighting coefficients for use in transmissions to multiple subscriber units, wherein each weighting coefficient of the multiple weighting coefficients is associated with an element of multiple elements and is further associated with a subscriber unit of multiple subscriber units and wherein each subscriber unit of the multiple subscriber units is associated with a different beam of multiple beams. As described in detail above, neither Gross nor Lopes, individually or in combination, teaches such a limitation. Accordingly, the applicant respectfully requests that claim 11 may now be passed to allowance.

Since claims 12-14 depend upon allowable claim 11, the applicant respectfully requests that claims 12-14 may now be passed to allowance.

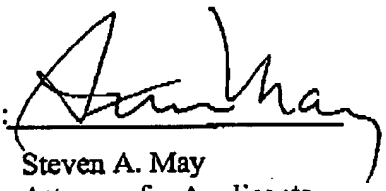
Claims 5 and 15 each includes features of approximating one or more terms in an expression which jointly optimizes a signal-to-noise ratio (SNR) for multiple subscriber units to produce an approximation of the joint optimization expression of an SNR, wherein each subscriber unit of the multiple subscriber units is associated with a different beam of multiple beams. As described in detail above, neither Gross nor Lopes, individually or in combination, teaches a joint optimization for multiple users that are each associated with a different beam of multiple beams, let alone any scheme for approximating such a joint optimization (and thereby simplifying its determination). Accordingly, the applicant respectfully requests that claims 5 and 15 may now be passed to allowance.

The Examiner rejected claims 9 and 22 under 35 U.S.C. §103(a) as being unpatentable over Gross in view of Lopes and further in view of Visotsky. More particularly, the Examiner acknowledged that neither Gross nor Lopes disclose the features of claims 9 and 22 of a transmitting device operating in an environment where intra-cell interference dominates inter-cell interference and an approximating of one or more terms in a joint optimization expression of an SNR comprises a step of assuming a high geometry propagation environment. However, the Examiner contended that these

features are taught by Visotsky. The applicant respectfully disagrees. While Visotsky teaches a transmitting device operating in a high geometry propagation environment, all Visotsky teaches in the sections referenced by the Examiner is that the equalization taught therein may or may not be beneficial in a high geometry environment. Visotsky teaches nothing concerning joint optimization of an SNR, let alone an approximating of one or more terms in a joint optimization expression of an SNR, let alone doing such approximating by assuming a high geometry propagation environment. Therefore, none of Gross, Lopes, or Visotsky, individually or in combination, teaches the features of claims 9 and 22 of approximating of one or more terms in a joint optimization expression of an SNR by assuming a high geometry propagation environment. For this reason, and since claims 6-10 depend upon allowable claim 5 and claims 16-23 depend upon allowable claim 15, the applicant respectfully requests that claims 6-10 and 16-23 may now be passed to allowance.

As the applicant has overcome all substantive rejections and objections given by the Examiner and has complied with all requests properly presented by the Examiner, the applicant contends that this Amendment, with the above discussion, overcomes the Examiner's objections to and rejections of the pending claims. Therefore, the applicant respectfully solicits allowance of the application. If the Examiner is of the opinion that any issues regarding the status of the claims remain after this response, the Examiner is invited to contact the undersigned representative to expedite resolution of the matter.

Respectfully submitted,
Colin Frank

By: 

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